



357091

VERNETA SIMON
02/18/03 12:19 PM

To: Mary Fulghum, Cathleen Martwick
Subject: DuSable Park

..... Forwarded by VERNETA SIMON/R5/USEPA/US on 02/18/03 12:18 PM



"Krippel, Mark" To: FREDRICK MICKE, VERNETA SIMON cc: Larry Jensen
<mkrippel@kmg.com> Subject:
02/18/03 10:58 AM

Attached are Hazen's answers to Larry's questions regarding DuSable Park.
Also attached are the gamma-spec reports Larry requested.

<<Answers to USEPA Questions Feb 14.pdf>> <<Flotation gamma spec.pdf>>

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Answers to USEPA Questions Feb 14. Flotation gamma spec.p



Hazen Research, Inc.
4601 Indiana Street
Golden, CO 80403 USA
Tel: (303) 279-4501
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February 14, 2003

E-MAIL AND MAIL TRANSMITTAL

Mr. Mark Krippel
Kerr-McGee Chemical, LLC
800 Weyrauch Street
West Chicago, IL 60185

Subject: Kerr-McGee Dusable Park Report, Answers to USEPA Questions
Hazen Project 9939

Dear Mark:

The answers to the questions you asked on February 12, 2003, follow.

- 1a. Liberated particles refer to discrete particles of a specific material that are not attached, i.e., that are not physically intergrown with another particle.
- 1b. Angular particles are particles without a specific shape, exhibiting sharp edges.
- 1c. Glassy slag particles are particles exhibiting characteristics of slag particles derived from smelting operations such as copper smelting or coal burning or other high temperature operations. Slag particles typically show rounded holes derived from gas bubbles. Glassy usually refers to rapidly cooled silica-rich melt, in which the individual chemical components have not crystallized. This condition results in an amorphous state in which no ordered atomic crystal structure has developed, as in window glass.
- 1d. Molecularly dispersed implies that a specific element, like a metal, occurs finely disseminated through a matrix without having formed a compound of its own, at least as far as can be detected by high magnification in an electron microprobe analyzer. It is as if the metal is dissolved in a solid.
- 1e. Discrete phases relates to the definition in 1d. and means that thorium evidently did not precipitate or crystallize in the matrix, yielding its own compound such as a thorium oxide (ThO_2), but instead remained in solid solution in the matrix.
- 1f. Natural siliceous gangue refers to particles with characteristics of natural materials such as quartz or feldspar sand particles.
- 1g. In contrast to molecularly dispersed (question 1d.), exsolved iron oxides or other crystalline compounds may be in a dissolved state in a melt. Upon cooling, the solubility

of the iron oxide or other material in the molten matrix decreases, resulting in precipitation or crystallization, i.e., forming its own discrete crystals. Exsolved forms of iron oxides in slag matrices typically occur as dendritic skeletal crystal aggregates.

2. The thorium in the REPO₄ + Th (monazite) particles is present as a rare earth phosphate. Not all of the monazite particles contain thorium, nor is it an essential constituent of monazite. We designate the ones with thorium as REPO₄ + Th. Thorium oxide (ThO₂) particles are the only other compound of thorium found.
3. The thorium is apparently dissolved in the glassy slag as a solid solution (see answer 1d.).
4. "Locked in" means that the particle is totally encapsulated inside another particle. We do not know the origin of these particles. They appear to be natural and not derived from a man made slag. One possibility could be the occurrence of monazite as an accessory constituent in a rock such as granite.
5. The unusual slag particle referred to in the first paragraph on page 5 is shown in Figure 3. This particle has several tiny spots (the brightest ones) of thorium-bearing monazite. The thing that is unusual about it is the tiny micron-sized monazite inclusions and that they are associated with the streaky iron-rich areas, not the dark aluminum silicate matrix. The contrast in this photo was adjusted to an extreme level to make the tiny inclusions stand out, but the printing process makes them hard to distinguish. The iron-rich streaks are also unusual in that they are not the typical angular or dendritic shapes similar to those in Figure 8. The reference in the paragraph on page 5 to nondetectable thorium in several glassy particles refers to other slag particles (not pictured) that have abundant discrete iron oxide phases but no detectable thorium.
6. The specific gravity of 1.65 was chosen to be dense enough to float the coal particles (which should be lighter than 1.65) in the sample from the silicates and heavy (more dense) minerals. Quartz, most silicates, and many slag-type materials have densities of less than 2.96, so they can be separated from monazite (4.8 to 5.5 sg). Tetrabromoethane (2.96 sg) is the most common liquid available for the purpose of these separations that is dense enough to float silicates. The 1.65 liquid was prepared by diluting tetrabromoethane with kerosene.
7. The detection limit of 500 ppm for thorium and uranium refers to the detection limit of each element measured separately. The 500 ppm limit corresponds to an activity of 339 pCi/g for natural uranium and 109 pCi/g for natural thorium.
8. The detection limits of 0.05% Th or U apply to individual particles that were analyzed and not to the bulk sample that would determine whether or not it is source material as defined by the Atomic Energy Act.
9. The coal has a variety of types of inclusions including silicates and possibly thorium-bearing monazite. Each type of inclusion would have a detection limit dependent upon its

Mr. Mark Krippel
February 14, 2003
Page 3

composition. For instance, the glassy slag particles have a detection limit of 0.03% Th and 0.03% U.

10. The detection limits for the analyses done on the bulk samples by Kerr McGee and the USEPA are probably 10 ppm (0.001%) or less, which is much lower than 0.03%. The samples contain a significant amount of slag, which is probably the source of any uranium that may be present. Any uranium in the slag would most likely be present in solid solution (since no discrete occurrences were found), in which case it would not be detectable with the microprobe. For instance, assuming there is 30% slag in the sample and it contains 0.04% U in solid solution (which is below the detection limit of the microprobe), the bulk sample analysis due to uranium in the slag would be 0.012%, which would be detectable by Kerr McGee and the USEPA.

The nondetectable thorium or uranium in the Area C sample mentioned on page 1 refers to the coal particles, as stated in the last paragraph on that page, and not to the whole sample. Thorium was found in the Area C sample in monazite particles as well as in slag particles.

Sincerely,



Roland Schmidt
Director, Mineralogical Laboratories



Robert K. Johnson
Metallurgist

RS/RKJ/wcf

Configuration : DKA200:[GAMMA.SCUSR.ARCHIVE]SMP_C200MESH_GE1_LSCVIAL_81118.CNF;1

---- Sample Information ----

Sample Title : Dusable Park
 Sample ID : C ~200 MESH Sample Quantity : 1.84000E+01 gram
 Sample Type : DRY WEIGHT Sample Geometry :
 Sample Number : 81118 Spctrm Collector : RAY LANCASTER
 Analyzed By :

---- Sample Decay/Count Information ----

Sample Date : 15-NOV-2002 00:00:00 Acquisition date : 15-NOV-2002 12:10:26
 Decay time : 0 12:10:26.21 % dead time : 0.1%
 Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:01.98

---- Detector Parameters ----

Energy cal. time : 6-NOV-2002 13:38:35. Energy cal. oper.: RAY LANCASTER
 Detector name : GE1 Counting geometry: LSC Vial
 Effic. cal. time : 29-JAN-2002 06:33:43 Effic. cal. oper.: RAY LANCASTER

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/gram)	Act error	MDA (pCi/gram)	MDA error	Act/MDA
K-40	1.605E+01	8.507E+00	7.530E+00	0.000E+00	2.131
TL-208	3.625E+00	8.410E-01	5.535E-01	0.000E+00	6.549
BI-212	6.672E+00	4.568E+00	4.336E+00	0.000E+00	1.539
PB-212	1.312E+01	1.489E+00	8.508E-01	0.000E+00	15.415
BI-214	5.077E+00	1.333E+00	1.064E+00	0.000E+00	4.771
PB-214	4.973E+00	1.078E+00	1.015E+00	0.000E+00	4.898
AC-228	1.187E+01	2.251E+00	1.969E+00	0.000E+00	6.028

---- Non-Identified Nuclides ----

Nuclide	Key-Line		MDA (pCi/gram)	MDA error	Act/MDA
	Activity (pCi/gram)	K.L. Ided			
PB-210	4.571E+00	4.576E+00	7.955E+00	0.000E+00	0.575
PA-234	6.635E+01	6.986E+01	1.333E+02	0.000E+00	0.498
TH-234	3.434E+00	4.526E+00	7.621E+00	0.000E+00	0.451
U-235	2.040E+00	1.676E+00	7.276E-01	0.000E+00	2.804

11/19/02

Date: 11/19/02
 By: RP
R. P. Lancaster
11/19/2002

Nuclide Type: Natural

Uncorrected Decay Corr 2-Sigma

Nuclide	Energy	%Abn	%Eff	pCi/gram	pCi/gram	%Error	Status
K-40	1460.81	10.67*	7.845E-01	1.605E+01	1.605E+01	53.01	OK

Final Mean for 1 Valid Peaks = 1.605E+01 +/- 8.507E+00 (53.01%)

TL-208	277.35	6.80	3.972E+00	-----	Line Not Found	-----	Absent
	583.14	84.20*	1.957E+00	3.571E+00	3.571E+00	25.00	OK
	860.37	12.46	1.334E+00	4.049E+00	4.049E+00	61.95	OK

Final Mean for 2 Valid Peaks = 3.625E+00 +/- 8.410E-01 (23.20%)

BI-212	727.17	11.80*	1.575E+00	6.672E+00	6.672E+00	68.46	OK
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Final Mean for 1 Valid Peaks = 6.672E+00 +/- 4.568E+00 (68.46%)

PB-212	238.63	44.60*	4.527E+00	1.293E+01	1.293E+01	11.65	OK
	300.09	3.41	3.700E+00	2.118E+01	2.118E+01	46.59	OK

Final Mean for 2 Valid Peaks = 1.312E+01 +/- 1.489E+00 (11.35%)

BI-214	609.31	46.30*	1.875E+00	4.572E+00	4.572E+00	33.06	OK
	1120.29	15.10	1.027E+00	5.264E+00	5.264E+00	78.26	OK
	1238.11	5.94	9.285E-01	8.738E+00	8.738E+00	86.54	OK
	1764.49	15.80	6.435E-01	8.087E+00	8.087E+00	56.14	OK

Final Mean for 4 Valid Peaks = 5.077E+00 +/- 1.333E+00 (26.26%)

PB-214	295.21	19.20	3.755E+00	5.425E+00	5.425E+00	33.02	OK
	351.92	37.20*	3.191E+00	4.716E+00	4.716E+00	28.60	OK

Final Mean for 2 Valid Peaks = 4.973E+00 +/- 1.078E+00 (21.67%)

AC-228	209.28	4.40	5.041E+00	1.173E+01	1.173E+01	89.94	OK
	338.32	11.40	3.311E+00	1.197E+01	1.197E+01	41.33	OK
	911.07	27.70*	1.261E+00	1.237E+01	1.237E+01	23.77	OK
	969.11	16.60	1.186E+00	9.942E+00	9.942E+00	56.34	OK

Final Mean for 4 Valid Peaks = 1.187E+01 +/- 2.251E+00 (18.97%)

Flag: "*" = Keyline

No interference correction performed

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	39.59	11	89	0.83	79.83	77	8	3.19E-03	144.7	
2	2	75.08	303	146	1.40	150.74	144	20	8.43E-02	9.5	1.47E+00
3	2	77.43	446	143	1.34	155.44	144	20	1.24E-01	7.3	
4	0	89.26	495	448	7.53	179.08	164	29	1.37E-01	13.1	
5	0	129.39	37	131	1.02	259.27	255	9	1.02E-02	58.4	
6	0	163.49	30	145	5.32	327.39	315	17	8.19E-03	95.2	
7	0	185.98	84	77	1.43	372.34	366	12	2.32E-02	23.7	
8	0	210.43	64	151	2.00	421.18	412	16	1.77E-02	45.0	
9	0	220.52	22	79	0.79	441.34	434	10	6.15E-03	79.9	
10	0	238.96	640	158	1.39	478.19	471	15	1.78E-01	5.8	
11	0	270.91	46	67	1.25	542.05	538	11	1.28E-02	37.2	
12	0	295.58	96	42	1.38	591.34	586	10	2.66E-02	16.5	
13	0	300.54	65	41	0.82	601.25	596	13	1.82E-02	23.3	
14	0	328.28	40	84	0.65	656.69	649	14	1.11E-02	51.0	
15	0	338.95	111	96	1.20	678.01	671	13	3.08E-02	20.7	
16	0	351.90*	137	53	1.26	703.89	697	14	3.81E-02	14.3	
17	0	390.40	15	32	1.27	780.82	774	10	4.16E-03	77.4	
18	0	406.18	21	23	1.51	812.35	807	10	5.74E-03	49.9	
19	0	410.61	47	18	1.58	821.22	816	14	1.30E-02	24.0	
20	0	464.26	23	35	1.13	928.42	921	12	6.36E-03	56.3	
21	0	511.20*	79	38	1.94	1022.23	1015	18	2.19E-02	24.7	
22	0	583.23	144	37	1.81	1166.19	1160	16	4.01E-02	12.5	
23	0	609.61	97	39	1.55	1218.91	1214	14	2.70E-02	16.5	
24	0	695.06	10	26	1.50	1389.70	1382	13	2.78E-03	109.8	
25	0	727.48	30	22	1.36	1454.49	1449	10	8.44E-03	34.2	
26	0	772.50	11	17	1.36	1544.48	1540	9	3.02E-03	76.2	
27	0	795.70	7	19	1.01	1590.85	1582	14	2.01E-03	129.2	
28	0	841.52	17	7	1.38	1682.45	1677	12	4.77E-03	41.6	
29	0	860.40	17	4	1.38	1720.18	1717	7	4.58E-03	31.0	
30	0	867.27	10	7	1.51	1733.91	1729	8	2.79E-03	57.1	
31	0	879.20	5	7	1.45	1757.76	1754	8	1.42E-03	95.6	
32	0	911.02	106	15	1.27	1821.38	1816	10	2.94E-02	11.9	
33	0	969.12	48	29	1.53	1937.51	1930	13	1.33E-02	28.2	
34	0	1120.39	20	11	2.95	2239.90	2235	11	5.56E-03	39.1	
35	0	1181.25	10	7	4.83	2361.58	2353	13	2.64E-03	64.1	
36	0	1237.97	12	4	0.98	2474.98	2470	9	3.28E-03	43.3	
37	0	1249.83	10	2	3.72	2498.69	2493	11	2.65E-03	46.4	
38	0	1311.76	10	0	0.58	2622.50	2616	12	2.78E-03	31.6	
39	0	1460.71*	33	8	1.53	2920.32	2912	15	9.15E-03	26.5	
40	0	1546.97	8	3	0.86	3092.81	3086	11	2.30E-03	52.1	
41	0	1590.63	30	5	5.31	3180.11	3170	19	8.42E-03	25.0	
42	0	1764.25	20	3	2.65	3527.30	3521	12	5.60E-03	28.1	
43	0	2613.41*	66	0	1.44	5225.87	5217	16	1.85E-02	13.7	

Flag: "*" = Peak area was modified by background subtraction

Configuration : DKA200:[GAMMA.SCUSR.ARCHIVE]SMP_14X200MFL165_GE1_LSCVIAL_81134.CNF;1

---- Sample Information ----

Sample Title : Dusable Park
 Sample ID : 14X200M FL 1.65 Sample Quantity : 1.23000E+01 gram
 Sample Type : DRY WEIGHT Sample Geometry :
 Sample Number : 81134 Spctrm Collector : RAY LANCASTER
 Analyzed By :

---- Sample Decay/Count Information ----

Sample Date : 18-NOV-2002 00:00:00 Acquisition date : 18-NOV-2002 15:08:46
 Decay time : 0 15:08:46.80 % dead time : 0.1%
 Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:02.30

---- Detector Parameters ----

Energy cal. time : 6-NOV-2002 13:38:35. Energy cal. oper.: RAY LANCASTER
 Detector name : GE1 Counting geometry: LSC Vial
 Effic. cal. time : 29-JAN-2002 06:33:43 Effic. cal. oper.: RAY LANCASTER

Combined Activity-MDA Report

---- Identified Nuclides ----

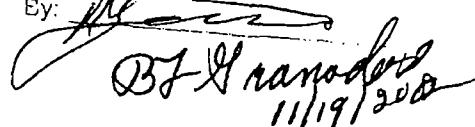
Nuclide	Activity (pCi/gram)	Act error	MDA (pCi/gram)	MDA error	Act/MDA
K-40	7.070E+00	7.796E+00	7.024E+00	0.000E+00	1.120
TL-208	1.807E+00	7.286E-01	6.960E-01	0.000E+00	2.596
PB-210	6.431E+00	4.680E+00	7.299E+00	0.000E+00	0.881
PB-212	3.374E+00	1.276E+00	9.390E-01	0.000E+00	3.593
BI-214	1.168E+00	1.572E+00	1.345E+00	0.000E+00	0.868
PB-214	2.406E+00	1.024E+00	1.266E+00	0.000E+00	1.901
AC-228	2.945E+00	1.265E+00	2.611E+00	0.000E+00	1.128
PA-234	8.572E+01	9.905E+01	1.365E+02	0.000E+00	0.628
TH-234	6.484E+00	6.304E+00	7.382E+00	0.000E+00	0.878

---- Non-Identified Nuclides ----

Nuclide	Key-Line		MDA (pCi/gram)	MDA error	Act/MDA
	Activity (pCi/gram)	K.L. Ided			
BI-212	1.384E+00	3.615E+00	6.290E+00	0.000E+00	0.220
U-235	3.420E-01	1.767E+00	6.985E-01	0.000E+00	0.490

Date: 11/19/02

By:


BJ Lancaster
11/19/02

Nuclide Type: Natural

Uncorrected Decay Corr 2-Sigma

Nuclide	Energy	%Abn	%Eff	pCi/gram	pCi/gram	%Error	Status
K-40	1460.81	10.67*	7.845E-01	7.870E+00	7.870E+00	99.06	OK

Final Mean for 1 Valid Peaks = 7.870E+00 +/- 7.796E+00 (99.06%)

TL-208	277.35	6.80	3.972E+00	-----	Line Not Found	-----	Absent
	583.14	84.20*	1.957E+00	1.807E+00	1.807E+00	40.33	OK
	860.37	12.46	1.334E+00	-----	Line Not Found	-----	Absent

Final Mean for 1 Valid Peaks = 1.807E+00 +/- 7.286E-01 (40.33%)

PB-210	46.50	4.05*	5.858E+00	6.431E+00	6.431E+00	72.77	OK
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Final Mean for 1 Valid Peaks = 6.431E+00 +/- 4.680E+00 (72.77%)

PB-212	238.63	44.60*	4.527E+00	3.374E+00	3.374E+00	37.82	OK
	300.09	3.41	3.700E+00	-----	Line Not Found	-----	Absent

Final Mean for 1 Valid Peaks = 3.374E+00 +/- 1.276E+00 (37.82%)

BI-214	609.31	46.30*	1.875E+00	1.168E+00	1.168E+00	134.59	OK
	1120.29	15.10	1.027E+00	-----	Line Not Found	-----	Absent
	1238.11	5.94	9.285E-01	-----	Line Not Found	-----	Absent
	1764.49	15.80	6.435E-01	-----	Line Not Found	-----	Absent

Final Mean for 1 Valid Peaks = 1.168E+00 +/- 1.572E+00 (134.59%)

PB-214	295.21	19.20	3.755E+00	2.052E+00	2.052E+00	81.11	OK
	351.92	37.20*	3.191E+00	2.622E+00	2.622E+00	49.50	OK

Final Mean for 2 Valid Peaks = 2.406E+00 +/- 1.024E+00 (42.53%)

AC-228	209.28	4.40	5.041E+00	-----	Line Not Found	-----	Absent
	338.32	11.40	3.311E+00	1.859E+00	1.859E+00	186.20	OK
	911.07	27.70*	1.261E+00	3.146E+00	3.146E+00	47.14	OK
	969.11	16.60	1.186E+00	2.935E+00	2.935E+00	115.96	OK

Final Mean for 3 Valid Peaks = 2.945E+00 +/- 1.265E+00 (42.97%)

PA-234	1001.03	0.59*	1.148E+00	8.572E+01	8.572E+01	115.55	OK
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Final Mean for 1 Valid Peaks = 8.572E+01 +/- 9.905E+01 (115.55%)

TH-234	63.29	3.80*	7.305E+00	6.484E+00	6.484E+00	97.23	OK
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Final Mean for 1 Valid Peaks = 6.484E+00 +/- 6.304E+00 (97.23%)

Flag: ** = Keyline

No interference correction performed

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	*Err	Fit
1	0	46.62	25	21	1.25	93.88	90	7	6.94E-03	36.4	
2	0	54.47	20	55	2.87	109.56	101	12	5.58E-03	78.0	
3	0	63.81	29	55	0.67	128.22	124	9	8.19E-03	48.6	
4	0	76.45	173	113	3.10	153.48	143	18	4.80E-02	16.3	
5	0	93.93	34	34	1.61	188.40	185	7	9.35E-03	33.8	
6	0	167.24	22	53	1.48	334.88	330	10	6.17E-03	64.6	
7	0	238.97	112	80	1.20	478.22	473	13	3.10E-02	18.9	
8	0	295.18	24	22	1.59	590.53	586	9	6.73E-03	40.6	
9	0	338.84	12	28	0.73	677.78	671	11	3.19E-03	93.1	
10	0	351.85*	51	23	1.20	703.78	697	13	1.42E-02	24.8	
11	0	420.98	22	3	5.27	841.94	835	13	6.06E-03	27.4	
12	0	511.14*	22	12	1.99	1022.12	1016	17	6.10E-03	62.4	
13	0	542.20	9	16	4.73	1084.19	1077	13	2.59E-03	94.4	
14	0	583.21	49	11	1.56	1166.14	1161	14	1.36E-02	20.2	
15	0	593.41	4	13	0.99	1186.54	1178	11	1.04E-03	198.2	
16	0	610.20	17	27	1.07	1220.09	1214	12	4.61E-03	67.3	
17	0	654.56	8	0	1.62	1308.75	1306	6	2.22E-03	35.4	
18	0	851.84	7	4	1.40	1703.07	1699	8	1.94E-03	62.3	
19	0	911.45	18	0	1.49	1822.22	1817	11	5.00E-03	23.6	
20	0	969.20	9	6	0.95	1937.68	1930	11	2.63E-03	58.0	
21	0	1001.75	10	6	0.96	2002.74	1996	11	2.64E-03	57.8	
22	0	1460.43*	11	3	1.53	2919.76	2914	11	3.00E-03	49.5	
23	0	2613.71*	5	0	1.16	5226.48	5219	13	1.51E-03	87.1	

Flag: "*" = Peak area was modified by background subtraction



Nuclide Type: Natural

Uncorrected Decay Corr 2-Sigma

Nuclide	Energy	%Abn	%Eff	pCi/gram	pCi/gram	%Error	Status
K-40	1460.81	10.67*	7.845E-01	1.019E+01	1.019E+01	55.41	OK

Final Mean for 1 Valid Peaks = 1.019E+01 +/- 5.648E+00 (55.41%)

TL-208	277.35	.6.80	3.972E+00	-----	Line Not Found	-----	Absent
	583.14	84.20*	1.957E+00	1.864E+00	1.864E+00	27.15	OK
	860.37	12.46	1.334E+00	2.042E+00	2.042E+00	178.12	OK

Final Mean for 2 Valid Peaks = 1.868E+00 +/- 5.014E-01 (26.85%)

PB-212	238.63	44.60*	4.527E+00	5.670E+00	5.670E+00	13.23	OK
	300.09	3.41	3.700E+00	-----	Line Not Found	-----	Absent

Final Mean for 1 Valid Peaks = 5.670E+00 +/- 7.501E-01 (13.23%)

BI-214	609.31	46.30*	1.875E+00	5.085E+00	5.085E+00	21.96	OK
	1120.29	15.10	1.027E+00	5.446E+00	5.446E+00	62.72	OK
	1238.11	5.94	9.285E-01	1.094E+01	1.094E+01	50.00	OK
	1764.49	15.80	6.435E-01	-----	Line Not Found	-----	Absent

Final Mean for 3 Valid Peaks = 5.331E+00 +/- 1.042E+00 (19.54%)

PB-214	295.21	19.20	3.755E+00	2.656E+00	2.656E+00	74.35	OK
	351.92	37.20*	3.191E+00	3.767E+00	3.767E+00	30.58	OK

Final Mean for 2 Valid Peaks = 3.485E+00 +/- 9.949E-01 (28.55%)

AC-228	209.28	4.40	5.041E+00	5.821E+00	5.821E+00	88.76	OK
	338.32	11.40	3.311E+00	5.097E+00	5.097E+00	54.74	OK
	911.07	27.70*	1.261E+00	4.346E+00	4.346E+00	47.54	OK
	969.11	16.60	1.186E+00	3.343E+00	3.343E+00	125.92	OK

Final Mean for 4 Valid Peaks = 4.554E+00 +/- 1.480E+00 (32.49%)

Flag: "*" = Keyline

Configuration : DKA200:[GAMMA.SCUSR.ARCHIVE]SMP_14X200MESHSink_GE1_LSCVIAL_81129.CNF;1

---- Sample Information ----

Sample Title : Dusable Park
 Sample ID : 14X200 MESH SINK Sample Quantity : 3.10000E+00 gram.
 Sample Type : DRY WEIGHT Sample Geometry :
 Sample Number : 81129 Spctrm Collector : RAY LANCASTER
 Analyzed By :

---- Sample Decay/Count Information ----

Sample Date : 18-NOV-2002 00:00:00 Acquisition date : 18-NOV-2002 12:19:08
 Decay time : 0 12:19:08.66 % dead time : 0.1%
 Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:03.03

---- Detector Parameters ----

Energy cal. time : 6-NOV-2002 13:38:35. Energy cal. oper.: RAY LANCASTER
 Detector name : GE1 Counting geometry: LSC Vial
 Effic. cal. time : 29-JAN-2002 06:33:43 Effic. cal. oper.: RAY LANCASTER

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/gram)	Act error	MDA (pCi/gram)	MDA error	Act/MDA
K-40	6.783E+01	6.097E+01	4.469E+01	0.000E+00	1.518
TL-208	8.845E+01	9.709E+00	4.892E+00	0.000E+00	18.081
PB-212	2.316E+02	1.581E+01	7.537E+00	0.000E+00	30.730
BI-214	4.590E+01	1.098E+01	1.013E+01	0.000E+00	4.532
PB-214	3.581E+01	9.895E+00	9.993E+00	0.000E+00	3.583
AC-228	2.468E+02	2.015E+01	2.024E+01	0.000E+00	12.190
PA-234	6.802E+02	6.802E+02	8.818E+02	0.000E+00	0.771
TH-234	6.931E+01	6.442E+01	7.379E+01	0.000E+00	0.939

---- Non-Identified Nuclides ----

Nuclide	Key-Line		MDA (pCi/gram)	MDA error	Act/MDA
	Activity (pCi/gram)	K.L. Act error			
PB-210	2.289E+01	4.302E+01	7.121E+01	0.000E+00	0.321
BI-212	1.508E+02	3.789E+01	7.734E+01	0.000E+00	1.950
U-235	8.029E+00	1.519E+01	5.788E+00	0.000E+00	1.387

Reviewed

Date: 11/19/02

By:

A handwritten signature in black ink, appearing to read "B.J. Granados". Below the signature, the date "11/19/02" is written.

Nuclide Type: Natural

Uncorrected Decay Corr 2-Sigma

Nuclide	Energy	%Abn	%Eff	pCi/gram	pCi/gram	%Error	Status
K-40	1460.81	10.67*	7.845E-01	6.783E+01	6.783E+01	89.88	OK

Final Mean for 1 Valid Peaks = 6.783E+01+/- 6.097E+01 (89.88%)

TL-208	277.35	6.80	3.972E+00	8.119E+01	8.119E+01	65.30	OK
	583.14	84.20*	1.957E+00	8.882E+01	8.882E+01	11.81	OK
	860.37	12.46	1.334E+00	8.780E+01	8.780E+01	33.39	OK

Final Mean for 3 Valid Peaks = 8.845E+01+/- 9.709E+00 (10.98%)

PB-212	238.63	44.60*	4.527E+00	2.319E+02	2.319E+02	6.92	OK
	300.09	3.41	3.700E+00	2.241E+02	2.241E+02	40.46	OK

Final Mean for 2 Valid Peaks = 2.316E+02+/- 1.581E+01 (6.82%)

BI-214	609.31	46.30*	1.875E+00	4.438E+01	4.438E+01	27.52	OK
	1120.29	15.10	1.027E+00	5.157E+01	5.157E+01	64.19	OK
	1238.11	5.94	9.285E-01	-----	Line Not Found	-----	Absent
	1764.49	15.80	6.435E-01	5.324E+01	5.324E+01	71.79	OK

Final Mean for 3 Valid Peaks = 4.590E+01+/- 1.098E+01 (23.91%)

PB-214	295.21	19.20	3.755E+00	3.248E+01	3.248E+01	51.24	OK
	351.92	37.20*	3.191E+00	3.763E+01	3.763E+01	32.70	OK

Final Mean for 2 Valid Peaks = 3.581E+01+/- 9.895E+00 (27.63%)

AC-228	209.28	4.40	5.041E+00	1.908E+02	1.908E+02	40.25	OK
	338.32	11.40	3.311E+00	2.519E+02	2.519E+02	14.85	OK
	911.07	27.70*	1.261E+00	2.419E+02	2.419E+02	13.23	OK
	969.11	16.60	1.186E+00	2.644E+02	2.644E+02	15.43	OK

Final Mean for 4 Valid Peaks = 2.468E+02+/- 2.015E+01 (8.17%)

PA-234	1001.03	0.59*	1.148E+00	6.802E+02	6.802E+02	100.00	OK
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Final Mean for 1 Valid Peaks = 6.802E+02+/- 6.802E+02 (100.00%)

TH-234	63.29	3.80*	7.305E+00	6.931E+01	6.931E+01	92.94	OK
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Final Mean for 1 Valid Peaks = 6.931E+01+/- 6.442E+01 (92.94%)

Flag: "*" = Keyline

No interference correction performed

Pk	IC	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	62.97	79	398	0.99	126.55	123	9	2.21E-02	46.5	
2	3	75.18	658	493	1.13	150.93	146	19	1.83E-01	7.0	1.53E+00
3	3	77.43	1067	443	1.25	155.43	146	19	2.96E-01	4.9	
4	3	87.61	449	365	1.57	175.78	164	29	1.25E-01	9.1	1.15E+01
5	3	93.57	297	243	1.24	187.68	164	29	8.25E-02	10.8	
6	0	99.81	95	320	1.76	200.15	195	10	2.64E-02	36.7	
7	0	105.47	66	349	1.62	211.46	206	10	1.84E-02	54.0	
8	0	115.72	52	189	0.88	231.94	229	7	1.45E-02	45.9	
9	0	129.29	125	288	1.39	259.05	255	9	3.48E-02	26.2	
10	0	209.61	175	261	1.46	419.55	415	12	4.85E-02	20.1	
11	0	238.87	1933	561	1.26	478.01	471	14	5.37E-01	3.5	
12	0	270.39	113	128	1.17	541.01	536	9	3.13E-02	20.4	
13	0	278.05	91	181	0.76	556.31	549	13	2.52E-02	32.6	
14	0	295.32	97	148	1.45	590.83	586	10	2.69E-02	25.6	
15	0	300.67	117	122	1.27	601.52	597	10	3.24E-02	20.2	
16	0	327.99	142	126	1.28	656.11	649	12	3.94E-02	17.9	
17	0	338.32	393	124	1.31	676.74	670	12	1.09E-01	7.4	
18	0	342.59	36	75	2.38	685.28	681	8	9.99E-03	45.4	
19	0	352.00*	184	164	1.44	704.09	699	13	5.12E-02	16.4	
20	0	409.61	68	47	1.43	819.21	816	7	1.90E-02	20.7	
21	0	423.27	17	95	2.67	846.52	838	12	4.79E-03	116.1	
22	0	463.13	119	63	1.19	926.16	921	12	3.32E-02	16.1	
23	0	510.70*	178	144	1.64	1021.23	1012	18	4.94E-02	18.2	
24	0	583.27	604	123	1.71	1166.28	1158	18	1.68E-01	5.9	
25	0	609.59	159	77	1.47	1218.88	1214	12	4.42E-02	13.8	
26	0	685.20	14	21	0.68	1370.00	1367	6	3.89E-03	58.2	
27	0	785.42	17	29	0.95	1570.30	1567	8	4.84E-03	57.9	
28	0	794.84	100	10	1.53	1589.14	1582	14	2.77E-02	12.2	
29	0	860.59	60	11	1.57	1720.56	1715	11	1.67E-02	16.7	
30	0	911.23	349	39	1.89	1821.78	1812	16	9.69E-02	6.6	
31	2	964.60	80	14	2.30	1928.48	1922	22	2.22E-02	17.6	1.18E+00
32	2	968.71	215	12	1.93	1936.69	1922	22	5.97E-02	7.7	
33	0	986.95	20	2	2.29	1973.14	1969	10	5.56E-03	26.5	
34	0	1000.88	19	15	0.91	2001.00	1992	15	5.28E-03	50.0	
35	0	1031.43	17	0	1.46	2062.06	2056	11	4.72E-03	24.3	
36	0	1051.61	22	10	3.93	2102.41	2095	13	6.18E-03	35.9	
37	0	1119.89	33	18	2.96	2238.91	2233	14	9.17E-03	32.1	
38	0	1208.91	10	23	3.35	2416.88	2405	22	2.90E-03	118.7	
39	0	1246.81	28	14	2.55	2492.65	2484	18	7.82E-03	36.0	
40	0	1301.18	5	15	0.78	2601.36	2592	12	1.49E-03	150.0	
41	0	1459.88*	23	16	4.92	2918.66	2909	16	6.51E-03	44.9	
42	0	1508.45	13	5	3.33	3015.78	3010	11	3.52E-03	45.4	
43	0	1513.51	7	6	0.57	3025.89	3020	9	1.82E-03	81.2	
44	0	1571.52	5	5	1.25	3141.90	3136	10	1.39E-03	94.9	
45	0	1590.06	66	5	7.18	3178.97	3168	23	1.82E-02	15.5	
46	0	1598.22	9	3	0.79	3195.29	3191	10	2.56E-03	46.4	
47	0	1764.55	22	12	2.77	3527.91	3523	9	6.21E-03	35.9	
48	0	1873.45	10	0	0.56	3745.70	3739	13	2.78E-03	31.6	
49	0	2038.15	11	0	0.58	4075.09	4069	12	3.06E-03	30.2	
50	0	2331.90	13	3	1.73	4662.68	4655	13	3.54E-03	40.4	
51	0	2613.72*	168	22	1.66	5226.49	5217	17	4.67E-02	10.3	

Flag: "*" = Peak area was modified by background subtraction

16

Configuration : DKA200:[GAMMA.SCUSR.ARCHIVE]SMP_14MFLOAT165_GE1_LSCVIAL_81119.CNF,1

---- Sample Information ----

Sample Title : Dusable Park
 Sample ID : +14M FLOAT 1.65 Sample Quantity : 1.19000E+01 gram
 Sample Type : DRY WEIGHT Sample Geometry :
 Sample Number : 81119 Spctrm Collector : RAY LANCASTER
 Analyzed By :

---- Sample Decay/Count Information ----

Sample Date : 15-NOV-2002 00:00:00 Acquisition date : 15-NOV-2002 13:34:01
 Decay time : 0 13:34:01.00 % dead time : 0.1%
 Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:01.87

---- Detector Parameters ----

Energy cal. time : 6-NOV-2002 13:38:35. Energy cal. oper.: RAY LANCASTER
 Detector name : GE1 Counting geometry: LSC Vial
 Effic. cal. time : 29-JAN-2002 06:33:43 Effic. cal. oper.: RAY LANCASTER

Combined Activity-MDA Report

---- Identified Nuclides ----

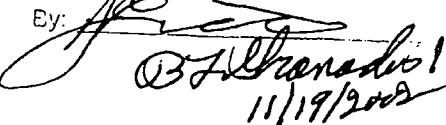
Nuclide	Activity (pCi/gram)	Act error	MDA (pCi/gram)	MDA error	Act/MDA
TL-208	1.770E+00	8.255E-01	6.434E-01	0.000E+00	2.751
PB-212	3.456E+00	1.130E+00	9.361E-01	0.000E+00	3.692
BI-214	1.524E+00	1.401E+00	1.561E+00	0.000E+00	0.976
PB-214	1.304E+00	1.956E+00	1.980E+00	0.000E+00	0.658
AC-228	3.429E+00	2.023E+00	2.301E+00	0.000E+00	1.490

---- Non-Identified Nuclides ----

Nuclide	Key-Line		MDA (pCi/gram)	MDA error	Act/MDA
	Activity (pCi/gram)	K.L.			
K-40	8.773E-02	6.641E+00	1.155E+01	0.000E+00	0.008
PB-210	6.757E-01	4.332E+00	7.126E+00	0.000E+00	0.095
BI-212	1.433E+00	3.737E+00	6.503E+00	0.000E+00	0.220
PA-234	1.121E+01	7.065E+01	1.223E+02	0.000E+00	0.092
TH-234	4.313E+00	4.560E+00	8.020E+00	0.000E+00	0.538
U-235	-9.235E-02	1.484E+00	7.447E-01	0.000E+00	-0.124

Reviewed

Date: 11/19/02

By: 
B. Fernandez
11/19/2002

Nuclide Type: Natural

Uncorrected Decay Corr 2-Sigma

Nuclide	Energy	%Abn	%Eff	pCi/gram	pCi/gram	%Error	Status
TL-208	277.35	6.80	3.972E+00	-----	Line Not Found	-----	Absent
	583.14	84.20*	1.957E+00	1.770E+00	1.770E+00	46.64	OK
	860.37	12.46	1.334E+00	-----	Line Not Found	-----	Absent

Final Mean for 1 Valid Peaks = 1.770E+00 +/- 8.255E-01 (46.64%)

PB-212	238.63	44.60*	4.527E+00	3.456E+00	3.456E+00	32.70	OK
	300.09	3.41	3.700E+00	-----	Line Not Found	-----	Absent

Final Mean for 1 Valid Peaks = 3.456E+00 +/- 1.130E+00 (32.70%)

BI-214	609.31	46.30*	1.875E+00	1.524E+00	1.524E+00	91.98	OK
	1120.29	15.10	1.027E+00	-----	Line Not Found	-----	Absent
	1238.11	5.94	9.285E-01	-----	Line Not Found	-----	Absent
	1764.49	15.80	6.435E-01	-----	Line Not Found	-----	Absent

Final Mean for 1 Valid Peaks = 1.524E+00 +/- 1.401E+00 (91.98%)

PB-214	295.21	19.20	3.755E+00	1.304E+00	1.304E+00	150.05	OK
	351.92	37.20*	3.191E+00	-----	Line Not Found	-----	Absent

Final Mean for 1 Valid Peaks = 1.304E+00 +/- 1.956E+00 (150.05%)

AC-228	209.28	4.40	5.041E+00	-----	Line Not Found	-----	Absent
	338.32	11.40	3.311E+00	3.342E+00	3.342E+00	103.68	OK
	911.07	27.70*	1.261E+00	3.783E+00	3.783E+00	91.72	OK
	969.11	16.60	1.186E+00	3.144E+00	3.144E+00	113.83	OK

Final Mean for 3 Valid Peaks = 3.429E+00 +/- 2.023E+00 (58.99%)

Flag: "*" = Keyline

No interference correction performed

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	32.03	14	41	0.55	64.72	61	9	3.76E-03	92.5	
2	0	78.51	37	113	1.17	157.60	152	10	1.03E-02	59.0	
3	0	93.41	50	64	1.39	187.36	183	9	1.38E-02	32.7	
4	0	186.08	57	98	7.30	372.54	361	23	1.58E-02	47.0	
5	0	238.76	111	54	1.07	477.79	472	12	3.07E-02	16.4	
6	0	295.18	15	34	0.92	590.54	587	9	4.14E-03	75.0	
7	0	338.73	20	25	2.54	677.58	672	10	5.56E-03	51.8	
8	0	356.31	73	62	9.64	712.71	698	29	2.02E-02	35.3	
9	0	369.10	20	28	3.44	738.25	729	16	5.50E-03	63.8	
10	0	501.66	22	2	2.46	1003.17	998	10	5.99E-03	25.5	
11	0	511.24*	25	9	2.42	1022.32	1016	15	7.08E-03	49.4	
12	0	583.50	46	14	1.67	1166.73	1160	15	1.28E-02	23.3	
13	0	609.99	21	19	1.40	1219.67	1213	11	5.82E-03	46.0	
14	0	806.42	10	2	0.97	1612.29	1609	8	2.69E-03	41.4	
15	0	911.74	21	15	1.80	1822.81	1813	15	5.82E-03	45.9	
16	0	969.80	10	6	1.10	1938.88	1933	9	2.73E-03	56.9	
17	0	988.00	8	0	0.98	1975.25	1972	6	2.22E-03	35.4	
18	0	1468.88	6	0	0.74	2936.67	2932	8	1.67E-03	40.8	
19	0	2613.63*	17	0	1.41	5226.30	5219	14	4.84E-03	33.6	

Flag: "*" = Peak area was modified by background subtraction

Configuration : DKA200:[GAMMA.SCUSR.ARCHIVE]SMP_14MFLOAT296_GE1_LSCVIAL_81130.CNF;1

---- Sample Information ----

Sample Title : Dusable Park
 Sample ID : +14M FLOAT 2.96 Sample Quantity : 2.06000E+01 gram
 Sample Type : DRY WEIGHT Sample Geometry :
 Sample Number : 81130 Spctrm Collector : RAY LANCASTER
 Analyzed By :

---- Sample Decay/Count Information ----

Sample Date : 18-NOV-2002 00:00:00 Acquisition date : 18-NOV-2002 14:05:17
 Decay time : 0 14:05:17.19 % dead time : 0.1%
 Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:02.45

---- Detector Parameters ----

Energy cal. time : 6-NOV-2002 13:38:35. Energy cal. oper.: RAY LANCASTER
 Detector name : GE1 Counting geometry: LSC Vial
 Effic. cal. time : 29-JAN-2002 06:33:43 Effic. cal. oper.: RAY LANCASTER

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/gram)	Act error	MDA (pCi/gram)	MDA error	Act/MDA
K-40	1.629E+01	5.842E+00	6.139E+00	0.000E+00	2.654
TL-208	1.438E+00	6.642E-01	4.123E-01	0.000E+00	3.488
PB-210	1.988E+00	3.898E+00	5.593E+00	0.000E+00	0.355
BI-212	4.661E+00	3.445E+00	3.254E+00	0.000E+00	1.432
PB-212	4.008E+00	7.969E-01	7.102E-01	0.000E+00	5.644
BI-214	3.382E+00	1.079E+00	9.229E-01	0.000E+00	3.665
PB-214	2.635E+00	9.277E-01	7.647E-01	0.000E+00	3.446
AC-228	5.253E+00	1.293E+00	1.628E+00	0.000E+00	3.226

---- Non-Identified Nuclides ----

Nuclide	Key-Line		MDA (pCi/gram)	MDA error	Act/MDA
	Activity (pCi/gram)	K.L. Ided			
PA-234	2.919E+01	5.502E+01	1.003E+02	0.000E+00	0.291
TH-234	3.356E-01	3.381E+00	5.448E+00	0.000E+00	0.062
U-235	6.602E-02	1.210E+00	5.121E-01	0.000E+00	0.129

Reviewed

Date: 11/19/02

By: JL →
R.L. Grindstaff
11/19/2002

Nuclide Type: Natural

Uncorrected Decay Corr 2-Sigma

Nuclide	Energy	%Abn	%Eff	pCi/gram	pCi/gram	%Error	Status
K-40	1460.81	10.67*	7.845E-01	1.629E+01	1.629E+01	35.86	OK

Final Mean for 1 Valid Peaks = 1.629E+01 +/- 5.842E+00 (35.86%)

TL-208	277.35	6.80	3.972E+00	-----	Line Not Found	-----	Absent
	583.14	84.20*	1.957E+00	1.438E+00	1.438E+00	46.18	OK
	860.37	12.46	1.334E+00	-----	Line Not Found	-----	Absent

Final Mean for 1 Valid Peaks = 1.438E+00 +/- 6.642E-01 (46.18%)

PB-210	46.50	4.05*	5.858E+00	1.988E+00	1.988E+00	196.06	OK
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Final Mean for 1 Valid Peaks = 1.988E+00 +/- 3.898E+00 (196.06%)

BI-212	727.17	11.80*	1.575E+00	4.661E+00	4.661E+00	73.92	OK
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Final Mean for 1 Valid Peaks = 4.661E+00 +/- 3.445E+00 (73.92%)

PB-212	238.63	44.60*	4.527E+00	3.983E+00	3.983E+00	20.07	OK
	300.09	3.41	3.700E+00	8.216E+00	8.216E+00	124.01	OK

Final Mean for 2 Valid Peaks = 4.008E+00 +/- 7.969E-01 (19.88%)

BI-214	609.31	46.30*	1.875E+00	3.338E+00	3.338E+00	36.75	OK
	1120.29	15.10	1.027E+00	3.533E+00	3.533E+00	64.17	OK
	1238.11	5.94	9.285E-01	-----	Line Not Found	-----	Absent
	1764.49	15.80	6.435E-01	-----	Line Not Found	-----	Absent

Final Mean for 2 Valid Peaks = 3.382E+00 +/- 1.079E+00 (31.90%)

PB-214	295.21	19.20	3.755E+00	2.277E+00	2.277E+00	86.03	OK
	351.92	37.20*	3.191E+00	2.739E+00	2.739E+00	38.46	OK

Final Mean for 2 Valid Peaks = 2.635E+00 +/- 9.277E-01 (35.21%)

AC-228	209.28	4.40	5.041E+00	6.700E+00	6.700E+00	112.13	OK
	338.32	11.40	3.311E+00	3.543E+00	3.543E+00	79.34	OK
	911.07	27.70*	1.261E+00	5.438E+00	5.438E+00	30.35	OK
	969.11	16.60	1.186E+00	6.664E+00	6.664E+00	50.92	OK

Final Mean for 4 Valid Peaks = 5.253E+00 +/- 1.293E+00 (24.62%)

Flag: "*" = Keyline

No interference correction performed

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	47.28	13	58	0.69	95.21	91	6	3.60E-03	98.0	
2	3	75.10	141	85	1.06	150.78	146	19	3.90E-02	13.0	2.47E+00
3	3	77.47	204	87	1.19	155.52	146	19	5.68E-02	10.6	
4	0	87.47	52	80	1.12	175.50	173	6	1.44E-02	30.6	
5	0	92.53	97	142	1.41	185.61	179	14	2.70E-02	28.5	
6	0	100.77	43	72	1.13	202.08	198	11	1.19E-02	42.1	
7	0	111.66	43	99	4.75	223.83	217	15	1.20E-02	52.0	
8	0	129.31	23	69	1.23	259.11	255	8	6.50E-03	64.5	
9	0	175.95	30	70	2.92	352.29	343	13	8.24E-03	61.5	
10	0	179.85	28	39	0.99	360.08	357	8	7.67E-03	43.3	
11	0	187.95	16	90	2.67	376.27	368	11	4.53E-03	115.5	
12	0	209.72	41	102	1.41	419.78	413	15	1.13E-02	56.1	
13	0	238.81	221	82	1.18	477.90	473	9	6.13E-02	10.0	
14	0	270.29	23	35	1.83	540.80	535	9	6.38E-03	51.3	
15	0	296.02	45	77	0.85	592.22	585	13	1.25E-02	43.0	
16	0	302.03	28	58	1.68	604.24	597	15	7.90E-03	62.0	
17	0	314.04	14	26	0.64	628.22	621	10	3.91E-03	74.2	
18	0	338.68	37	50	1.12	677.46	672	10	1.02E-02	39.7	
19	0	352.32*	89	46	1.32	704.72	700	13	2.48E-02	19.2	
20	0	403.28	9	22	0.93	806.55	803	8	2.39E-03	100.5	
21	0	462.63	21	17	1.45	925.17	920	11	5.87E-03	43.2	
22	0	492.67	7	25	3.81	985.19	975	14	2.00E-03	151.0	
23	0	531.93	12	9	0.51	1063.67	1058	10	3.21E-03	58.6	
24	0	572.96	14	26	3.02	1145.67	1136	14	3.83E-03	85.1	
25	0	583.69	65	34	1.49	1167.11	1160	15	1.81E-02	23.1	
26	0	609.50	80	26	1.67	1218.69	1210	17	2.21E-02	18.4	
27	0	666.52	10	2	1.90	1332.66	1330	6	2.86E-03	36.7	
28	0	688.31	7	10	1.89	1376.20	1371	9	2.05E-03	82.7	
29	0	697.23	26	14	4.80	1394.04	1387	14	7.22E-03	36.3	
30	0	727.21	24	11	1.51	1453.95	1446	15	6.60E-03	37.0	
31	0	761.13	9	8	0.70	1521.75	1517	10	2.54E-03	65.4	
32	0	911.31	52	3	1.16	1821.94	1816	11	1.45E-02	15.2	
33	0	968.59	36	12	0.93	1936.44	1929	12	1.00E-02	25.5	
34	0	1073.53	7	2	1.43	2146.22	2142	7	2.01E-03	48.1	
35	0	1119.59	15	2	1.81	2238.32	2232	10	4.17E-03	32.1	
36	0	1147.03	6	2	1.50	2293.17	2290	6	1.79E-03	49.7	
37	0	1460.47*	37	0	1.91	2919.84	2913	12	1.04E-02	17.9	
38	0	1537.07	8	0	3.83	3073.00	3067	12	2.22E-03	35.4	
39	0	2613.45*	13	10	1.90	5225.96	5219	14	3.68E-03	66.3	

Flag: "*" = Peak area was modified by background subtraction

Configuration : DKA200:[GAMMA,SCUSR,ARCHIVE]SMP_14MESHSink_Ge1_LSCVIAL_81128.CNF;1

---- Sample Information ----

Sample Title : Dusable Park
 Sample ID : +14 MESH SINK Sample Quantity : 7.60000E+00 gram
 Sample Type : DRY WEIGHT Sample Geometry :
 Sample Number : 81128 Spctrm Collector : RAY LANCASTER
 Analyzed By :

---- Sample Decay/Count Information ----

Sample Date : 18-NOV-2002 00:00:00 Acquisition date : 18-NOV-2002 10:03:55
 Decay time : 0 10:03:55.15 % dead time : 0.1%
 Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:02.58

---- Detector Parameters ----

Energy cal. time : 6-NOV-2002 13:38:35. Energy cal. oper.: RAY LANCASTER
 Detector name : Ge1 Counting geometry: LSC Vial
 Effic. cal. time : 29-JAN-2002 06:33:43 Effic. cal. oper.: RAY LANCASTER

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/gram)	Act error	MDA (pCi/gram)	MDA error	Act/MDA
K-40	1.951E+01	1.568E+01	2.201E+01	0.000E+00	0.886
TL-208	1.484E+00	1.386E+00	1.311E+00	0.000E+00	1.132
BI-212	5.552E+00	6.659E+00	9.527E+00	0.000E+00	0.583
PB-212	3.041E+00	1.536E+00	1.671E+00	0.000E+00	1.820
BI-214	2.717E+01	3.694E+00	2.263E+00	0.000E+00	12.006
PB-214	2.796E+01	3.353E+00	2.718E+00	0.000E+00	10.290

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/gram)	K.L. Ided	Act error	MDA (pCi/gram)	MDA error	Act/MDA
PB-210	2.004E+00	9.161E+00	1.508E+01	0.000E+00	0.133	
AC-228	7.792E-01	3.273E+00	5.690E+00	0.000E+00	0.137	
PA-234	1.302E+02	1.638E+02	3.075E+02	0.000E+00	0.423	
TH-234	-1.253E+00	1.002E+01	1.584E+01	0.000E+00	-0.079	
U-235	3.434E+00	3.597E+00	1.434E+00	0.000E+00	2.395	

Reviewed

Date: 11/19/02

By:


B.J. Hernandez
11/19/02

Nuclide Type: Natural

Uncorrected Decay Corr 2-Sigma

Nuclide	Energy	%Abn	%Eff	pCi/gram	pCi/gram	%Error	Status
K-40	1460.81	10.67*	7.845E-01	1.951E+01	1.951E+01	80.36	OK

Final Mean for 1 Valid Peaks = 1.951E+01 +/- 1.568E+01 (80.36%)

TL-208	277.35	6.80	3.972E+00	-----	Line Not Found	-----	Absent
	583.14	84.20*	1.957E+00	1.484E+00	1.484E+00	93.45	OK
	860.37	12.46	1.334E+00	-----	Line Not Found	-----	Absent

Final Mean for 1 Valid Peaks = 1.484E+00 +/- 1.386E+00 (93.45%)

BI-212	727.17	11.80*	1.575E+00	5.552E+00	5.552E+00	119.93	OK
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Final Mean for 1 Valid Peaks = 5.552E+00 +/- 6.659E+00 (119.93%)

PB-212	238.63	44.60*	4.527E+00	3.041E+00	3.041E+00	50.51	OK
	300.09	3.41	3.700E+00	-----	Line Not Found	-----	Absent

Final Mean for 1 Valid Peaks = 3.041E+00 +/- 1.536E+00 (50.51%)

BI-214	609.31	46.30*	1.975E+00	2.586E+01	2.586E+01	15.82	OK
	1120.29	15.10	1.027E+00	3.323E+01	3.323E+01	35.97	OK
	1238.11	5.94	9.285E-01	3.176E+01	3.176E+01	78.71	OK
	1764.49	15.80	6.435E-01	3.298E+01	3.298E+01	43.29	OK

Final Mean for 4 Valid Peaks = 2.717E+01 +/- 3.694E+00 (13.60%)

PB-214	295.21	19.20	3.755E+00	2.755E+01	2.755E+01	20.29	OK
	351.92	37.20*	3.191E+00	2.820E+01	2.820E+01	14.86	OK

Final Mean for 2 Valid Peaks = 2.796E+01 +/- 3.353E+00 (11.99%)

Flag: "*" = Keyline

No interference correction performed

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	53.10	26	44	1.00	106.83	104	7	7.20E-03	46.7	
2	3	75.12	157	96	1.19	150.83	146	16	4.36E-02	12.8	9.49E-01
3	3	77.33	233	96	1.54	155.23	146	16	6.48E-02	11.0	
4	0	87.23	46	126	0.84	175.02	172	8	1.27E-02	44.8	
5	0	132.15	31	76	4.69	264.78	258	13	8.55E-03	62.6	
6	0	137.23	25	43	1.35	274.92	271	8	6.96E-03	49.2	
7	0	155.82	22	76	3.84	312.08	305	10	6.21E-03	76.4	
8	2	238.99	62	53	1.67	478.25	472	23	1.73E-02	25.3	1.02E+00
9	2	242.15	110	36	1.48	484.58	472	23	3.05E-02	14.5	
10	0	295.36	201	53	1.10	590.90	585	12	5.58E-02	10.1	
11	0	323.40	41	30	5.37	646.93	639	15	1.15E-02	32.8	
12	0	352.09*	339	63	1.43	704.27	697	14	9.41E-02	7.4	
13	0	428.60	23	25	1.54	857.17	852	11	6.32E-03	47.4	
14	0	510.83*	26	30	1.92	1021.50	1013	17	7.17E-03	62.9	
15	0	583.60	25	23	2.09	1166.93	1159	14	6.87E-03	46.7	
16	0	609.34	227	22	1.65	1218.38	1212	13	6.31E-02	7.9	
17	0	673.48	7	10	3.22	1346.57	1339	10	2.01E-03	89.6	
18	0	679.74	12	15	3.80	1359.08	1350	15	3.33E-03	76.0	
19	0	727.61	10	9	0.88	1454.76	1449	9	2.90E-03	60.0	
20	0	768.63	34	6	1.52	1536.74	1530	13	9.40E-03	23.1	
21	0	815.39	11	10	1.67	1630.21	1623	10	3.13E-03	60.1	
22	0	838.67	12	8	1.48	1676.75	1670	12	3.41E-03	55.9	
23	0	843.89	9	2	1.45	1687.19	1683	7	2.55E-03	40.8	
24	0	869.31	7	10	0.99	1738.00	1728	13	2.01E-03	96.4	
25	0	877.28	14	0	0.73	1753.93	1748	12	3.89E-03	26.7	
26	0	1052.94	12	11	0.98	2105.06	2096	15	3.34E-03	67.2	
27	0	1120.19	52	9	1.38	2239.50	2233	12	1.45E-02	18.0	
28	0	1198.41	8	9	3.35	2395.88	2385	13	2.15E-03	90.2	
29	0	1213.72	8	3	3.86	2426.49	2419	13	2.23E-03	57.7	
30	0	1238.19	18	8	2.12	2475.42	2469	11	4.93E-03	39.4	
31	0	1355.69	8	5	1.44	2710.33	2705	9	2.08E-03	62.7	
32	0	1378.12	18	4	1.45	2755.18	2751	8	5.09E-03	29.9	
33	0	1460.78*	17	5	1.93	2920.47	2915	11	4.59E-03	40.2	
34	0	1728.67	20	3	2.10	3456.15	3450	11	5.59E-03	27.5	
35	0	1763.89	34	4	2.19	3526.58	3518	16	9.43E-03	21.6	

Flag: "*" = Peak area was modified by background subtraction

Configuration : DKA200:[GAMMA.SCUSR.ARCHIVE]SMP_B2200MESH_GE1_LSCVIAL_81117.CNF;1

---- Sample Information ----

Sample Title : Dusable Park
 Sample ID : B2 -200 MESH Sample Quantity : 1.80000E+01 gram
 Sample Type : DRY WEIGHT Sample Geometry :
 Sample Number : 81117 Spctrm Collector : RAY LANCASTER
 Analyzed By :

---- Sample Decay/Count Information ----

Sample Date : 15-NOV-2002 00:00:00 Acquisition date : 15-NOV-2002 10:17:12
 Decay time : 0 10:17:12.17 * dead time : 0.1%
 Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:02.30

---- Detector Parameters ----

Energy cal. time : 6-NOV-2002 13:38:35. Energy cal. oper.: RAY LANCASTER
 Detector name : GE1 Counting geometry: LSC Vial
 Effic. cal. time : 29-JAN-2002 06:33:43 Effic. cal. oper.: RAY LANCASTER

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/gram)	Act error	MDA (pCi/gram)	MDA error	Act/MDA
K-40	7.094E+00	1.101E+01	6.350E+00	0.000E+00	1.117
TL-208	8.728E+00	1.191E+00	8.258E-01	0.000E+00	10.569
BI-212	1.109E+01	1.108E+01	5.888E+00	0.000E+00	1.884
PB-212	2.682E+01	1.995E+00	1.026E+00	0.000E+00	26.130
BI-214	1.189E+00	1.269E+00	1.459E+00	0.000E+00	0.815
PB-214	1.958E+00	8.956E-01	1.116E+00	0.000E+00	1.755
AC-228	2.938E+01	2.832E+00	2.485E+00	0.000E+00	11.825

---- Non-Identified Nuclides ----

Nuclide	Key-Line		MDA (pCi/gram)	MDA error	Act/MDA
	Activity (pCi/gram)	K.L. Ided			
PB-210	-1.430E+00	5.450E+00	8.619E+00	0.000E+00	-0.166
PA-234	-4.417E+01	6.585E+01	9.552E+01	0.000E+00	-0.462
TH-234	-2.486E+00	6.370E+00	9.960E+00	0.000E+00	-0.250
U-235	-3.389E-01	1.979E+00	7.753E-01	0.000E+00	-0.437

11/19/02

11/19/02

B. Fernandez
11/19/2002

Nuclide Type: Natural

Uncorrected Decay Corr 2-Sigma

Nuclide	Energy	%Abn	%Eff	pCi/gram	pCi/gram	%Error	Status
K-40	1460.81	10.67*	7.845E-01	7.094E+00	7.094E+00	155.18	OK

Final Mean for 1 Valid Peaks = 7.094E+00 +/- 1.101E+01 (155.18%)

TL-208	277.35	6.80	3.972E+00	1.157E+01	1.157E+01	51.67	OK
	583.14	84.20*	1.957E+00	8.425E+00	8.425E+00	14.72	OK
	860.37	12.46	1.334E+00	1.314E+01	1.314E+01	46.62	OK

Final Mean for 3 Valid Peaks = 8.728E+00 +/- 1.191E+00 (13.64%)

BI-212	727.17	11.80*	1.575E+00	1.109E+01	1.109E+01	99.88	OK
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Final Mean for 1 Valid Peaks = 1.109E+01 +/- 1.108E+01 (99.88%)

PB-212	238.63	44.60*	4.527E+00	2.672E+01	2.672E+01	7.55	OK
	300.09	3.41	3.700E+00	3.071E+01	3.071E+01	42.64	OK

Final Mean for 2 Valid Peaks = 2.682E+01 +/- 1.995E+00 (7.44%)

BI-214	609.31	46.30*	1.875E+00	1.189E+00	1.189E+00	106.67	OK
	1120.29	15.10	1.027E+00	-----	Line Not Found	-----	Absent
	1238.11	5.94	9.285E-01	-----	Line Not Found	-----	Absent
	1764.49	15.80	6.435E-01	-----	Line Not Found	-----	Absent

Final Mean for 1 Valid Peaks = 1.189E+00 +/- 1.269E+00 (106.67%)

PB-214	295.21	19.20	3.755E+00	1.672E+00	1.672E+00	93.86	OK
	351.92	37.20*	3.191E+00	2.096E+00	2.096E+00	52.02	OK

Final Mean for 2 Valid Peaks = 1.958E+00 +/- 8.956E-01 (45.73%)

AC-228	209.28	4.40	5.041E+00	2.493E+01	2.493E+01	39.40	OK
	338.32	11.40	3.311E+00	2.976E+01	2.976E+01	19.70	OK
	911.07	27.70*	1.261E+00	2.883E+01	2.883E+01	14.55	OK
	969.11	16.60	1.186E+00	3.173E+01	3.173E+01	18.72	OK

Final Mean for 4 Valid Peaks = 2.938E+01 +/- 2.832E+00 (9.64%)

Flag: ** = Keyline

No interference correction performed

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	39.51	50	171	0.84	79.67	75	10	1.38E-02	51.2	
2	2	75.08	637	240	1.31	150.75	145	19	1.77E-01	6.0	2.09E+00
3	2	77.42	791	167	1.17	155.41	145	19	2.20E-01	4.8	
4	0	89.20	921	651	7.16	178.96	163	30	2.56E-01	8.7	
5	0	99.42	28	206	1.11	199.38	195	10	7.64E-03	100.2	
6	0	105.33	73	117	1.14	211.18	208	8	2.02E-02	28.2	
7	0	115.25	13	150	0.96	231.00	228	8	3.54E-03	168.9	
8	0	129.23	98	187	0.82	258.94	254	10	2.71E-02	28.1	
9	0	146.51	33	80	1.43	293.46	290	7	9.24E-03	48.2	
10	0	170.18	33	134	0.59	340.76	336	11	9.04E-03	71.3	
11	0	209.82	133	141	1.21	419.97	415	11	3.68E-02	19.7	
12	0	238.95	1294	259	1.28	478.18	472	13	3.59E-01	3.8	
13	0	255.62	6	91	3.28	511.50	508	10	1.54E-03	323.5	
14	0	270.27	113	87	1.26	540.77	534	12	3.14E-02	19.0	
15	0	277.60	75	75	1.07	555.42	549	12	2.08E-02	25.8	
16	0	296.07	29	54	1.59	592.32	588	7	8.03E-03	46.9	
17	0	300.24	93	80	1.12	600.65	596	11	2.58E-02	21.3	
18	0	328.38	53	101	1.18	656.88	653	12	1.48E-02	39.3	
19	0	338.39	269	107	1.34	676.90	672	13	7.48E-02	9.8	
20	0	352.07*	60	53	1.02	704.23	701	9	1.66E-02	26.0	
21	0	393.24	31	42	3.37	786.50	780	11	8.61E-03	44.9	
22	0	410.56	44	79	1.31	821.11	813	14	1.22E-02	46.5	
23	0	463.09	81	30	1.67	926.10	920	11	2.24E-02	17.3	
24	0	499.17	10	31	0.72	998.20	993	8	2.71E-03	105.0	
25	0	511.02*	148	74	2.15	1021.87	1013	21	4.11E-02	17.7	
26	0	562.79	23	30	2.18	1125.35	1120	10	6.39E-03	49.2	
27	0	566.49	20	14	1.21	1132.74	1129	8	5.46E-03	40.0	
28	0	583.13	333	56	1.45	1165.99	1158	15	9.25E-02	7.4	
29	0	609.51	25	43	0.94	1218.71	1214	10	6.87E-03	53.3	
30	0	728.60	49	92	2.02	1456.73	1445	21	1.37E-02	49.9	
31	0	782.09	13	12	1.85	1563.65	1559	8	3.66E-03	53.2	
32	0	785.68	17	11	0.92	1570.82	1567	9	4.59E-03	44.2	
33	0	795.28	54	34	1.13	1590.02	1583	14	1.49E-02	27.0	
34	0	835.65	20	15	1.62	1670.71	1666	9	5.44E-03	42.9	
35	0	847.31	13	10	0.57	1694.01	1687	13	3.67E-03	56.0	
36	0	861.24	52	16	2.12	1721.85	1715	18	1.45E-02	23.3	
37	0	894.04	9	12	2.42	1787.43	1783	9	2.41E-03	82.7	
38	0	903.78	9	2	0.62	1806.90	1804	6	2.37E-03	46.1	
39	0	911.01	241	13	1.93	1821.35	1813	17	6.71E-02	7.3	
40	0	934.85	5	11	0.58	1869.00	1859	11	1.39E-03	136.0	
41	2	963.97	47	2	2.30	1927.21	1920	33	1.30E-02	20.4	6.23E-01
42	2	968.81	150	8	2.25	1936.88	1920	33	4.16E-02	9.4	
43	0	1078.60	13	5	1.32	2156.36	2152	9	3.47E-03	41.7	
44	0	1312.47	7	6	1.51	2623.92	2617	11	1.81E-03	80.1	
45	0	1425.29	12	0	0.96	2849.50	2843	13	3.33E-03	28.9	
46	0	1462.52*	14	20	2.49	2923.95	2912	16	3.95E-03	77.6	
47	0	1620.34	22	7	4.10	3239.51	3232	13	5.97E-03	32.6	
48	0	2102.88	19	10	1.29	4204.57	4197	13	5.41E-03	40.0	
49	0	2613.85*	109	8	2.98	5226.75	5218	17	3.03E-02	12.0	

Flag: "*" = Peak area was modified by background subtraction

Configuration : DKA200:[GAMMA.SCUSR.ARCHIVE]SMP_B200MESH_GE1_LSCVIAL_81116.CNF;1

---- Sample Information ----

Sample Title : Dusable Park
 Sample ID : B@ +200 MESH Sample Quantity : 2.46000E+01 gram
 Sample Type : DRY WEIGHT Sample Geometry :
 Sample Number : 81116 Spctrm Collector : RAY LANCASTER
 Analyzed By :

---- Sample Decay/Count Information ----

Sample Date : 15-NOV-2002 00:00:00 Acquisition date : 15-NOV-2002 09:14:55
 Decay time : 0 09:14:55.55 % dead time : 0.1%
 Elapsed live time: 0 01:00:00.00 Elapsed real time: 0 01:00:02.22

---- Detector Parameters ----

Energy cal. time : 6-NOV-2002 13:38:35. Energy cal. oper.: RAY LANCASTER
 Detector name : GE1 Counting geometry: LSC Vial
 Effic. cal. time : 29-JAN-2002 06:33:43 Effic. cal. oper.: RAY LANCASTER

Combined Activity-MDA Report

---- Identified Nuclides ----

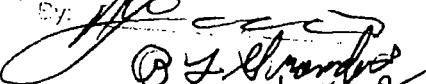
Nuclide	Activity (pCi/gram)	Act error	MDA (pCi/gram)	MDA error	Act/MDA
K-40	1.292E+01	4.782E+00	3.042E+00	0.000E+00	4.246
TL-208	1.285E+00	4.824E-01	4.568E-01	0.000E+00	2.812
BI-212	3.324E+00	3.490E+00	2.836E+00	0.000E+00	1.172
PB-212	4.067E+00	7.868E-01	5.990E-01	0.000E+00	6.790
BI-214	9.187E-01	6.091E-01	7.729E-01	0.000E+00	1.189
PB-214	1.244E+00	6.252E-01	6.601E-01	0.000E+00	1.884
AC-228	4.278E+00	9.423E-01	1.245E+00	0.000E+00	3.437

---- Non-Identified Nuclides ----

Nuclide	Key-Line		MDA (pCi/gram)	MDA error	Act/MDA
	Activity (pCi/gram)	K.L. Ided			
PB-210	-2.622E+00	3.132E+00	4.654E+00	0.000E+00	-0.563
Pa-234	-2.087E+00	4.415E+01	7.283E+01	0.000E+00	-0.029
TH-234	1.967E+00	3.111E+00	4.740E+00	0.000E+00	0.415
U-235	1.289E-01	9.531E-01	4.003E-01	0.000E+00	0.322

Reviewed

Date: 11/19/02

By: 
 B. J. Standard
 11/19/2002

Nuclide Type: Natural

Uncorrected Decay Corr 2-Sigma

Nuclide	Energy	%Abn	%Eff	pCi/gram	pCi/gram	%Error	Status
K-40	1460.81	10.67*	7.845E-01	1.292E+01	1.292E+01	37.03	OK

Final Mean for 1 Valid Peaks = 1.292E+01 +/- 4.782E+00 (37.03%)

TL-208	277.35	6.80	3.972E+00	-----	Line Not Found	-----	Absent
	583.14	84.20*	1.957E+00	1.285E+00	1.285E+00	37.55	OK
	860.37	12.46	1.334E+00	-----	Line Not Found	-----	Absent

Final Mean for 1 Valid Peaks = 1.285E+00 +/- 4.824E-01 (37.55%)

BI-212	727.17	11.80*	1.575E+00	3.324E+00	3.324E+00	104.99	OK
--------	--------	--------	-----------	-----------	-----------	--------	----

Final Mean for 1 Valid Peaks = 3.324E+00 +/- 3.490E+00 (104.99%)

PB-212	238.63	44.60*	4.527E+00	4.109E+00	4.109E+00	19.37	OK
	300.09	3.41	3.700E+00	2.248E+00	2.248E+00	233.57	OK

Final Mean for 2 Valid Peaks = 4.067E+00 +/- 7.868E-01 (19.34%)

BI-214	609.31	46.30*	1.875E+00	7.845E-01	7.845E-01	82.03	OK
	1120.29	15.10	1.027E+00	2.074E+00	2.074E+00	91.06	OK
	1238.11	5.94	9.285E-01	-----	Line Not Found	-----	Absent
	1764.49	15.80	6.435E-01	-----	Line Not Found	-----	Absent

Final Mean for 2 Valid Peaks = 9.187E-01 +/- 6.091E-01 (66.31%)

PB-214	295.21	19.20	3.755E+00	1.754E+00	1.754E+00	60.15	OK
	351.92	37.20*	3.191E+00	9.676E-01	9.676E-01	80.23	OK

Final Mean for 2 Valid Peaks = 1.244E+00 +/- 6.252E-01 (50.27%)

AC-228	209.28	4.40	5.041E+00	-----	Line Not Found	-----	Absent
	338.32	11.40	3.311E+00	4.048E+00	4.048E+00	51.18	OK
	911.07	27.70*	1.261E+00	5.131E+00	5.131E+00	29.35	OK
	969.11	16.60	1.186E+00	3.565E+00	3.565E+00	41.70	OK

Final Mean for 3 Valid Peaks = 4.278E+00 +/- 9.423E-01 (22.03%)

Flag: "*" = Keyline

No interference correction performed

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	66.03	17	58	1.36	132.67	131	6	4.67E-03	75.4	
2	2	75.01	118	78	1.20	150.60	143	19	3.28E-02	15.6	8.00E-01
3	2	77.36	173	65	1.00	155.30	143	19	4.82E-02	10.8	
4	0	90.53	136	237	6.91	181.62	172	21	3.78E-02	30.0	
5	0	129.75	34	68	0.97	259.98	255	10	9.52E-03	48.6	
6	0	153.05	64	78	5.59	306.54	299	16	1.79E-02	33.4	
7	0	238.66	272	106	1.09	477.59	472	12	7.55E-02	9.7	
8	0	295.24	41	33	0.80	590.65	585	10	1.15E-02	30.1	
9	0	300.50	9	39	1.45	601.17	600	6	2.58E-03	116.8	
10	0	328.03	22	21	1.00	656.18	651	9	6.05E-03	44.4	
11	0	338.35	50	31	1.78	676.81	672	11	1.39E-02	25.6	
12	0	352.31*	38	50	0.99	704.71	700	11	1.05E-02	40.1	
13	0	426.74	5	17	0.44	853.44	848	8	1.52E-03	134.7	
14	0	430.35	9	9	1.43	860.65	857	6	2.55E-03	61.2	
15	0	464.09	23	23	0.82	928.08	919	12	6.28E-03	48.0	
16	0	510.92*	25	22	2.17	1021.67	1015	19	6.97E-03	62.1	
17	0	559.05	20	6	1.37	1117.87	1113	10	5.46E-03	34.0	
18	0	583.58	69	25	1.52	1166.89	1161	11	1.93E-02	18.8	
19	0	609.43	22	18	1.87	1218.55	1213	10	6.20E-03	41.0	
20	0	629.98	12	9	0.87	1259.64	1255	11	3.21E-03	62.0	
21	0	658.35	12	7	0.74	1316.33	1313	7	3.33E-03	46.6	
22	0	713.83	9	3	1.56	1427.21	1424	7	2.57E-03	46.0	
23	0	720.15	11	3	1.09	1439.85	1436	7	3.00E-03	41.6	
24	0	728.73	20	19	1.96	1456.99	1449	13	5.62E-03	52.5	
25	0	795.12	12	10	1.87	1589.70	1585	8	3.31E-03	54.3	
26	0	911.21	59	3	1.20	1821.75	1815	14	1.63E-02	14.7	
27	0	946.77	13	2	1.34	1892.82	1886	11	3.55E-03	37.2	
28	0	968.91	23	0	1.21	1937.09	1934	8	6.39E-03	20.9	
29	0	1120.34	11	4	0.57	2239.82	2236	8	2.93E-03	45.5	
30	0	1138.64	10	0	1.00	2276.40	2273	7	2.78E-03	31.6	
31	0	1461.06*	35	0	2.29	2921.02	2914	16	9.84E-03	18.5	
32	0	1510.78	5	4	1.04	3020.44	3009	13	1.50E-03	82.1	
33	0	1592.83	10	0	1.72	3184.50	3181	8	2.78E-03	31.6	
34	0	2614.48*	22	3	2.06	5228.00	5221	14	6.14E-03	33.5	

Flag: "*" = Peak area was modified by background subtraction



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4601 Indiana St. · Golden, CO 80403
Tel.: (303) 279-4501 · Telex 45-860

CHAIN OF CUSTODY RECORD

Proj No.	Project Name					No. of Containers	Remarks		
9939	Kerr-McGee, West Chicago								
Samplers (Signature)									
Sta. No.	Date	Time	Comp.	Grab	Station Location				
					Soil Sample Area C 1014102			1	- 200 mesh
					Soil Sample Area C 1014102			1	+ 14 x 200 mesh Float (1.65 HL)
					Soil Sample Area C 1014102			1	+ 14 x 200 Mesh Float (2.96 HL)
					Soil Sample Area C 1014102			1	+ 14 x 200 Mesh Sink (2.96 HL)
					Soil Sample Area C 1014102			1	+ 14 mesh Float (1.65 HL)
					Soil Sample Area C 1014102	1	+ 14 mesh Float (2.96 HL)		
					Soil Sample Area C 1014102	1	+ 14 mesh Sink (2.96 HL)		
					Soil Durable Park Area B2	1	- 200 mesh		
					Soil Durable Park Area B2	1	+ 200 mesh		
Relinquished by: (Signature)		Date/Time	Received by: (Signature)		Relinquished by: (Signature)	Date/Time	Received by: (Signature)		
W. J. Sorensen		1450 11/13/82							
Relinquished by: (Signature)		Date/Time	Received by: (Signature)		Relinquished by: (Signature)	Date/Time	Received by: (Signature)		
Relinquished by: (Signature)		Date/Time	Received for laboratory by: (Signature)		Remarks:				

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